

# Greater Yellowstone Coordinating Committee

## Project Completion Report FY 2008

<b>Unit: Caribou-Targhee National Forest</b>
<b>Project Name:</b> Aspen Change Detection Mapping
<p><b>Project Description:</b> Quaking aspen (<i>Populus tremuloides</i>) stands provide critical wildlife habitat, wildlife and livestock forage, and enhance the diversity of conifer-dominated forests. Caribou-Targhee National Forest (CTNF) resource managers are working with partners from the BLM, Idaho Fish and Game, Idaho Department of Lands and other members of the Eastern Idaho Aspen Working Group to map the current distribution of aspen and quantify the potential for aspen loss (risk). This baseline information that is being collected will be used to monitor the decline or expansion of the aspen cover type and assess appropriate treatment techniques to help guide land management decisions.</p> <p>An important part of assessing risk to aspen is determining how much aspen cover has declined over time. Aspen cover is believed to be declining in eastern Idaho, however a reliable and quantitative regional-scale assessment of aspen decline is currently not available. Recent studies in the Western U.S. suggest persistent or increasing aspen stands at some locations and a much lesser degree of aspen decline than previously estimated. This might indicate that regional-scale spatial variability in aspen dynamics is greater than previously recognized. Little is known about regional-scale aspen dynamics and greater understanding is needed to guide regional policy and management decisions.</p> <p>This study is assessing aspen cover changes using early 20<sup>th</sup> century vegetation cover type maps and recent satellite imagery. The study is: 1) detecting and quantifying approximately 100-year changes in aspen cover at a coarser spatial scale using 1910 vegetation cover type maps and recent satellite imagery, and 2) detecting and quantifying approximately 20-year changes in aspen cover at a finer spatial scale using earlier and recent satellite images. The change detection will determine the rates and patterns of aspen cover changes at both scales and identify priority areas for aspen management. The area of focus is the Targhee portion of the CTNF and surrounding areas.</p>
<p><b>GYCC Funding Received:</b> <b>Partner Funding/In-Kind Received:</b> BLM- \$1,000 Idaho Dept. of Fish &amp; Game- \$2,000 CTNF-\$2,000 Idaho State University (ISU)- \$10,000 in-kind salary for the GIS research scientist .</p>
<p><b>Status of the Project:</b> Currently we have an ISU GIS research scientist working on this project. Her name is Temuulen Sankey (nickname Teki). Here is the current status report I have received from her: <i>I have been trying different image classification models. Specifically, I have been working on linear spectral unmixing models. Every time I develop a model, I have to do a complete accuracy assessment to determine if it's a good model or not. It took me a while and lots of different versions, but I have just come up with one model that gave me a very good accuracy (84%). This accuracy,</i></p>

*Note: You may expand and reduce size of blocks.*

*however, is at the pixel level, so it tells you if each pixel has aspen or not (presence/absence model). I am now trying to come up with a sub-pixel model, which tells you the percent cover of aspen within each pixel. I have one so far that I hope is pretty good, but the accuracy assessment is not complete yet, so I can't tell for sure. The accuracy assessment for the sub-pixel model involves a regression model with X number of sample pixels accurately located in the Landsat image and the high resolution airphoto I got from you guys. In these pixels both in the airphoto and the image, I am estimating sub-pixel percent cover of aspen and then correlate the two. Every time I develop a model, I have to do the regression model again, so it takes me a while. But I will let you know when I come up with a good correlation. Anyway, what this all means is that at the least I now have an aspen map (current distribution map) that I can overlay with the 1920s map and estimate aspen change. I will probably have this done by the end of this week or early next week. I will e-mail you my initial estimates of change, when I get that.*

Due to a conflict with ISU she has not received approval for the funds to be expended. We are working with are grants and agreement specialist and hope to get this resolved. Due to this conflict Teki is only working on this project part time until she gets fully funded and approval from ISU. We expect to have a final product from Teki by September 30, 2009.

**Products that can be shared across the GYA: (GIS data layers, maps, new protocols and methods)** We expect to have a GIS layer of current aspen distribution and historic distribution and the changes between historic and current condition.

**Project results: (Information worth sharing on methods, results, partnerships, etc)**

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**Report Date:** 2/4/09

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